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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,120	09/19/2001	Alexander Beckmann	P67117US0	6123

136 7590 06/25/2002

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EXAMINER

MCGUTHRY BANKS, TIMA M

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 06/25/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/926,120

Applicant(s)

BECKMANN, ALEXANDER

Examiner

Tima M. McGuthry-Banks

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 15-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 1742

DETAILED ACTION

Information Disclosure Statement

1. Since the listing of references on the sheet titled "Further Documents" is not on a PTO-1449, they have been considered by the examiner but will not be published.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 15-28 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In the specification, applicant only gives one example of a copper or copper/iron sulfidic ore (chalcopyrite) that is converted to covellite and pyrite (page 2). Claim 15 reads on any type of sulfidic ore converting to covellite and pyrite. Nowhere in the specification does the applicant state that the conversion would occur with any type of sulfidic ore. For example, covellite itself is a copper-sulfidic ore; therefore, the claim reads on covellite reacting to produce the same. It is not clear that one of ordinary skill in the art could get the products of covellite and pyrite with any type of copper-sulfidic or copper/iron-sulfidic ore.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 1742

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter that the applicant regards as his invention.

5. Claims 15-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The limitation "the addition" in Claim 15, line 5 is not an actively recited step; method claims should at least recite positive active steps. See *Ex parte Erlich* 34 USPQ 2d 1011 (1986).

7. Claim 15 lacks sufficient antecedent basis for the limitation "the reaction product" in line 8.

8. Claim 16 lacks sufficient antecedent basis for the limitation "said iron" in line 2 with respect to Claim 15.

9. In Claims 16, 21, and 23, a broad range or limitation followed by a linking term such as "especially" and a narrow range or limitation within the broad range or limitation is considered indefinite since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired.

10. In Claim 16, it is unclear if applicant intends to include the limitations of the subject matter contained within parentheses.

11. Claim 17 lacks sufficient antecedent basis for the limitation "the sulfide group" in line 3 with respect to Claim 15.

Art Unit: 1742

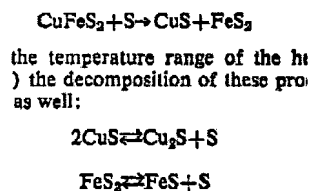
Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 15, 19, 21, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vizsolyi et al (US 3,459,535) in view of Campher (XP 002166815) and applicant's admitted prior art.

Vizsolyi teaches treating copper-iron-sulfur mineral sulfides such as chalcopyrite to improve their responsiveness to acid oxidation leaching (column 1, lines 15-17, 36, and 37). Finely divided sulfur is mixed with the sulfides to produce complex copper sulfides (lines 1, 2, and 64). The reaction is shown below from column 3, lines 30-36:



Regarding the presence of covellite and pyrite, it is well known in the art that covellite (or covellite) is CuS and pyrite is FeS₂¹. Additionally, the applicant defines the conversion reaction the same way as does Vizsolyi, notwithstanding the equilibrium reactions. Regarding Claim 17, the sulfides further undergo acid oxidation leaching (line 17). Regarding Claim 19, the process

Art Unit: 1742

can be operated in an open retort (column 5, line 51). Regarding Claim 21, the preferred temperature range is 300-600° C (column 3, line 69). Regarding Claim 23, the reaction time is up to 10 hours (Tables I-IV). Regarding Claim 24, the sulfur is added in the stoichiometric amount (column 3, lines 20 and 21). However, Vizsolyi does not specifically claim that the sulfides comprise other metals as in Claim 15.

Campher teaches that other metals are in copper minerals, such as gold, other precious metals, and rare earths (abstract). It would have been obvious to one with ordinary skill in the art at the time the invention was made that these other metals would be present in the ore in Vizsolyi, since both applicant's admitted prior art on page 1, lines 11 and 12 and Campher establish that it is well known for these metals to be present in sulfidic ore such as chalcopyrite. Additionally, it would have been obvious to one with ordinary skill in the art at the time the invention was made to extract precious and rare earth metals in addition to copper in Vizsolyi, since Campher teaches that these metals can be extracted with biological recovery processes.

14. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vizsolyi in view of Campher and applicant's admitted prior art applied to Claims 15, 19, 21, 23, and 24 above, and further in view of Jones '567.

Vizsolyi in view of Campher and applicant's admitted prior art discloses the invention substantially as claimed. However, Vizsolyi in view of Campher and applicant's admitted prior art does not specifically teach separating the metals as in Claim 16 or extracting sulfur by a further process as in Claim 17.

¹ From *The American Heritage Dictionary of the English Language, Third Edition* 1992.

Art Unit: 1742

Jones teaches a hydrometallurgical process as shown in Figure 3 below:

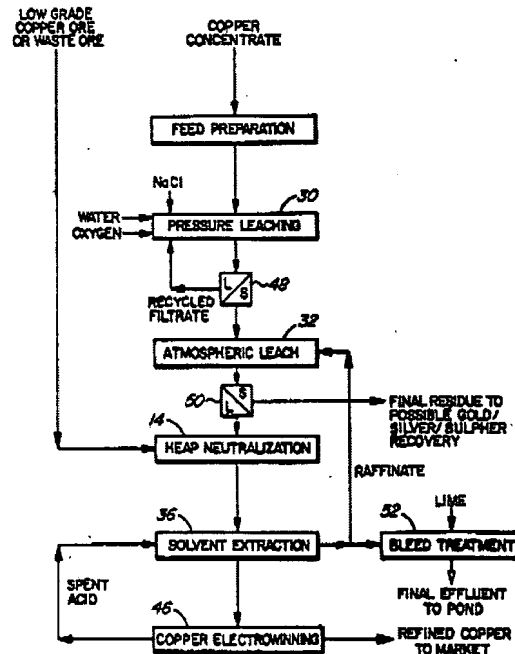


FIG. 3

Regarding Claims 16 and 17, it would have been obvious to one with ordinary skill in the art at the time the invention was made that the further leaching process in Vizsolyi in view of Campher and applicant's admitted prior art would involve the steps taught by Jones, since Jones teaches economically recovering copper from very low grade ore (column 14, lines 11-15). Jones shows in Figure 3 that copper is recovered separately from gold/silver and sulfur.

Allowable Subject Matter

15. Claims 18, 20, 22, and 25-28 were rejected under 32 U.S.C. 112 but were not rejected over art. These claims would be allowable if the rejections under 35 U.S.C. 112, both first and

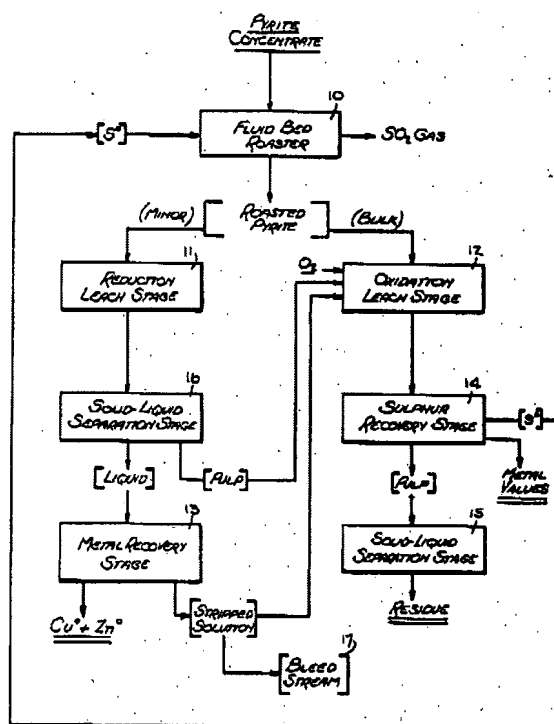
Art Unit: 1742

second paragraphs, were overcome and the limitations of the base claim and any intervening claims were included.

16. The following is a statement of reasons for the indication of allowable subject matter:

Regarding Claim 18, there is no basis to suggest that the retort atmosphere of Vizsolyi is inert. Regarding Claim 20, there is no basis to suggest that the retort of Vizsolyi could be a rotary furnace. Regarding Claim 25, Vizsolyi does not disclose or suggest that the retort atmosphere is 10 bar.

Regarding Claim 22, Pepper et al (US 4,177,067) teaches recovering silver, copper, and zinc from pyrite concentrates as shown below in the figure.



Art Unit: 1742

Zinc, silver, and copper are recovered for extraction (column 4, lines 60 and 61). The sulfur is recovered in stage 14. Tranquilla (US 6,074,533) teaches controlling microwave energy distribution in the reaction chamber of a fluidized bed reactor (abstract). It would have been obvious to one with ordinary skill in the art at the time the invention was made that the fluidized bed reactor in Pepper would use microwave energy, since Tranquilla establishes that using microwave energy with fluidized beds is well known (column 1, lines 48-52). Tranquilla also teaches that when metal-bearing ores or concentrates are treated with microwaves, the ore or concentrate becomes more amenable to leaching (lines 34-38). However, Pepper does not teach or suggest converting the ore to both covellite and pyrite, namely CuS (as defined by the applicant on page 2, line 13) during the roasting step. The roasting step in Pepper produces CuSO₄ (Pepper, column 3, line 60).

Regarding Claims 26 and 27, Sardisco (GB 1,467,360) teaches producing metallic copper from copper iron sulfide ore concentrates. The process includes reacting the sulfides with sulfur vapor before leaching (page 20, lines 13-19), forming copper iron sulfides. The sulfides can be more easily leached by conventional leaching agents (page 2, lines 6 and 7). A nitrogen atmosphere is maintained in the reaction chamber (page 3, lines 41 and 42). The temperature of the process is 460-500° C (page 2, line 10). The reaction takes as little as 6 minutes to complete (line 9). The ore is contacted with sulfur vapor (page 20, lines 16 and 17). The sulfur vapor is 200 mm to 760 mm of Hg (page 2, line 11). However, Sardisco does not disclose or suggest producing covellite as claimed.

Art Unit: 1742

Regarding Claim 28, the prior art does not disclose or suggest using sulfur plasma to precondition ore before leaching.

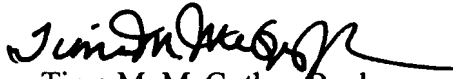
Regarding the search report for PCT/DE00/04447, GB 1,467,360 is in the same patent family as DE 2427158. US 3,985,555 does not teach a conversion step with additional sulfur. XP 002166816 does not teach leaching.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tima M. McGuthry-Banks, whose telephone number is 703-308-1917. The examiner can normally be reached on 9:30-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King, can be reached on 703-308-1146. The fax numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is 703-308-0651.


Tima M. McGuthry-Banks
Examiner
Art Unit 1742

June 24, 2002